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Section II. (Remarks)

Usage of Trademarks in Application

✓ At page 2, paragraph 1 of the June 7, 2004 Office Action, the Examiner has noted the presence of trademarks in the application, and stated that same should be capitalized and accompanied by generic terminology whenever they appear.

In response, it is confirmed that the use of trademarks in the application is in compliance with such requirements.

Amendment of Claims to Overcome Objection and §112 Rejection

In response to the Examiner's objection to claim 4 as lacking a definite article before the recitals of "sealingly effective amount" and "light-curable sealant composition," claim 4 has been correspondingly amended to set forth the definite article "the" in place of the indefinite article "a" in the claim. Claim 4 as thus amended overcomes the objection.

In response to the §112 second paragraph rejection of claims 8, 15, 25, 27 and 28, such claims have been amended. In claim 8 an antecedent phrase ("the light-curable sealant composition comprises liquid sealant and") has been inserted to provide appropriate basis for the subsequent recital of "the liquid sealant."

In response to the Examiner's rejection of claim 15 as lacking antecedent basis for the recital of "the curingly effective actinic radiation" in lines 1 and 2, the indefinite article "the" has been deleted and replaced by the definite article "a."

In response to the rejection of claim 25 as lacking antecedent basis for the recital of "the weight" in line 2, claim 25 has been amended to replace the term "the" with the term "total," so that the claim reads "based on total weight of the composition."

In response to the §112 rejection of claims 27 and 28 for various recitals of the definite article "the," such claims have been amended to reword the claims and delete the definite article, thereby overcoming the rejection.

In addition to the foregoing amendments overcoming the specific rejections and objection of the Examiner, an inadvertent typographical error in claim 1 due to auto-lettering of sub-paragraphs therein has been corrected. The third sub-paragraph of claim 1 is now set forth as sub-paragraph (c) rather than sub-paragraph (d).

With the foregoing amendments, all claims are now fully in proper form for further consideration and allowance.

Addition of New Claims 32 -34

New method claim 32 and new article claim 33 have been introduced, to encompass claim specific aspects of the invention disclosed in the specification. No new matter (35 USC § 132) is added.

Newly added claim 32 recites process for manufacturing an ammunition article, in which the process includes, *inter alia*:

“applying...a light-curable sealant composition, wherein the light-curable sealant composition is (i) not capillarily active at the joint, (ii) has a viscosity in a range from about 75 to 1000 centipoise at 25°C, and (iii) is UV-curable in exposure to ultraviolet radiation, as curingly effective light therefor, within a time period of from about 0.01 to about 0.5 second, wherein a force of between 45 and 200 pounds is required to be applied to separate said projectile from said casing after cure of the light-curable sealant composition, and wherein the light-curable sealant composition is not anaerobically curing; and...exposing the applied sealant composition to curingly effective light comprising said UV radiation for a time period of from about 0.01 to about 0.5 second

New claim 33 claims an ammunition article manufactured by such process.

New claim 34 has been added, of dependent form of claim 1, to recite that the applied sealant composition is non-capillarily active, consistent with the disclosure at page 10, lines 17-21 of the specification.

Rejection of Claims on Reference Grounds and Traversal Thereof

In the June 7, 2004 Office Action, claims 1-31 were rejected on reference grounds, including:

a rejection of claims 1,2,4-15, 24 and 29-31 under 35 USC § 103 as unpatentable over Brede et al., U.S. Patent 6,367,386 (Brede);

a rejection of claim 3 as unpatentable under 35 USC § 103 over Brede in view of De La Mare et al., U.S. Patent 4,359,370 (De La Mare);

a rejection of claims 16-23, 25, 28 and 30 under 35 USC § 103 as unpatentable over Brede in view of Leppard U.S. Patent 6,284,813 (Leppard); and

a rejection of claim 26 under 35 USC § 103 as unpatentable over Brede in view of Tamura et al., U.S. Patent 6,017,973 (Tamura).

The foregoing rejection of the claims are traversed in application to claims 1-31 and added claims 32-34 as now pending in the application.

Reconsideration of the patentability of claims 1-34 is requested, in light of the ensuing remarks.

Remarks Concerning Patentable Distinction of Claims 1-34 Over the Cited References

Claims 1, 2, 4-15, 24 and 29-31 have been rejected on § 103 grounds as unpatentable over Brede.

The Brede reference is discussed as to its deficiencies in the background section of the instant application, at page 4, lines 1-17, reproduced below for ease of reference:

“U.S. Patent No. 6,367,386 issued April 9, 2002 and U.S. Patent No. 6,584,909 issued July 1, 2003 disclose a method in which a capillary-active, acrylate-based anaerobic adhesive sealing agent is applied to the gap of the fully manufactured cartridge. This method is unsatisfactory for various reasons, including the fact that anaerobic adhesives behave inconsistently. They can solidify during application, resulting in the total loss of costly processing equipment. Due to differences in manufacturing equipment, processing speeds, process temperature conditions and metals, gaps between cartridges and projectiles are rarely identical. As a result of this structural variation, anaerobic adhesives do not seal with a uniform degree of adhesion. Occasionally the bond of the projectile to the cartridge is too strong, causing the weapon to explode. When relatively large gaps occur the presence of

oxygen can prevent the cure of the anaerobic adhesive, resulting in an unprotected cartridge.

The foregoing discussion reflects the failure of the art to satisfactorily address and resolve the problem of sealing ammunition articles at the interface of the casing and projectile, in a manner that is amenable to high-speed manufacturing of ammunition articles, to produce consistent and reliable sealing of the casing/projectile seam, without the problems incident to prior art approaches that compromise the integrity and function of the powder charge in the cartridge, and introduce substantial weapons cleaning and maintenance issues."

The instant claimed invention of applicant, wherein a light-curable sealant composition is applied to the projectile/casing joint and exposed to curingly effective light, resolves the above-discussed deficiencies of Brede.

This is conceded by the Examiner in the paragraph bridging pages 3 and 4 of the June 7, 2004 Office Action, but the Examiner has nonetheless contended that it would have been obvious to apply a light-curable sealant composition and expose that composition to curingly effective light:

"since the equivalence of the capillary-active, acrylate-based adhesive sealing agent disclosed by Brede and light-curable sealant compositions for their use in the sealing art and the selection of any known equivalents to capillary-active, acrylate-based adhesive sealing agents would be within the level of ordinary skill in the art"
(Page 4, lines 5-9 of the June 7, 2004 Office Action)

The Examiner's contention however, ignores the fact that Brede teaches away from the applicant's claimed invention.

Brede, at column 1, lines 39-41, discloses his sealant as providing a solution to use of bitumen sealants (bitumen sealants are also discussed in the background section of the instant application, at page 3, lines 3-20 thereof):

"The solution in accordance with the [Brede] invention provides the use of an anaerobically hardening sealant which does not contain any solvent and which is capillary-active." (column 1, lines 39-41 of Brede)

Thus, Brede requires that the sealant be (i) anaerobically hardening, (ii) contain no solvent, and (iii) be capillary-active.

Since this is the specific requirement of Brede's teachings, one of skill in the art would logically not arbitrarily discard such specific direction to use anaerobic sealant for projectile/casing sealing.

The Examiner's attention is directed to the applicable law stated in *In re Geisler*, 116 F.D. 1465, 1469, 43 USPQ2d 1362, 1565 (Fed. Cir. 1997) and *In re Malagry*, 499 F.2d 1297, 1303, 182 USPQ 549, 533 (CCPA 1974), noting that a *prima facie* case of obviousness has been rebutted if the art "in any material respect taught away" from the claimed invention. The meaning of "teaching away" is clear and well-established. A reference "may be said to teach away when a person of ordinary skill, upon reading the reference,...would be led in a direction divergent from the path that was taken by the applicant." *Tec Aire, Inc. v. Denso Mfg. Mich. Inc.*, 192 F.3d 1353, 1360, 52 USPQ 2d 1294, 1298 (Fed. Cir. 1999).

In the present instance, where the teachings of Bree are solely and exclusively directed to usage of "an anaerobically hardening sealant," such teaching cannot in any logical or legally tenable manner be taken as leading one of skill in the art in a direction toward use of sealant that is not "anaerobically hardening."

The specificity of Brede in teaching away from the present invention is further underscored by the fact that Brede teaches the use of a UV fluorescent indicator as a means of "the precise measuring out and therefore exactly the addition of the quantities of the sealant which are sufficient for the sealing" (column 2, lines 15-17 of Brede).

Thus, even though UV fluorescent material is utilized by Brede, requiring UV light for its detection, such material is employed only for detection and quality control purposes, there is no teaching, suggestion or derivative basis in Brede for any usage of UV-curable sealant.

Stated another way, if Brede already has to deploy UV light source means (for visualizing the fluorescent material), and if it were obvious to use UV-curable sealant for the projectile/casing sealing operation, then why does Brede nonetheless exclusively require "anaerobically hardening" sealant?

By utilizing ultraviolet radiation, not in any curing or hardening usage, but rather only for the purpose of excitation of a fluorescing agent as a "luminescent key" (column 2, line 43 of Brede), Brede in fact underscores the necessity of utilizing anaerobically hardening sealants.

Further emphasizing the divergence between the approach of Brede and applicant's claimed invention is the fact that Brede teaches the use of anaerobically hardening sealant "which is capillary-active" (column 1, line 41 of Brede).

The reason for such criticality of capillary-active anaerobic sealants is set out at column 1, lines 51-55 of Brede

"The sealants in accordance with the invention can enter very narrow gaps by capillary action and therefore also can enter the gap between the cartridge case and the projectile, the so-called inner mouth of the case which is formed when working with cartridges" (column 1, lines 51-55 of Brede).

This feature is also emphasized by Brede in the sentence bridging columns 1 and 2 of the patent ("with the sealants to be used in accordance with the invention entering the gap by capillary action").

By contrast, light-curable sealant compositions utilized in applicant's claimed invention are advantageously non-capillarily active; see the instant application at page 10, lines 18-20

"Viscosity should not be so low as to allow the sealant liquid to penetrate through the projectile/casing interface into the interior casing compartment by capillary action" (page 10, lines 18-20 instant application).

Thus, applicant's light-curable sealant compositions resolve problems incident to penetration of sealant into the interior of the casing (see, for example, page 3, lines 3-20 of the instant application, which discusses these problems, and the text at page 4, lines 1-11 of the instant application, discussing deficiencies of the anaerobic sealants taught by Brede, and achieve a substantial advance in the art over Brede.

The Examiner's attention also is directed to newly added claims 32-34, which recite the light-curable sealant composition of applicant's invention as being non-capillarily active, thus underscoring this further distinction over Brede (which teaches away from light-curable sealant compositions, as well as away from sealants that are non-capillarily active).

The point in time that is critical for an obviousness determination is the time that an invention was made, and the prior art at that time must provide specific teaching, suggestion or motivation to make the applicant's invention. See *In Re Dance*, 160 F3d 1339, 1342 (Fed. Cir. 1998) and *In Re Oetiker*, 977 F2d 1443, 1445, 24 USPQ 2d 1443, 1445 (Fed. Cir. 1992). It is also to be noted that

"To imbue one of ordinary skill in the art with knowledge of the invention...when no prior art references or references of record convey or suggest that knowledge, is

to fall victim to the insidious effect of a hindsight syndrome wherein that which only the inventor taught is used against its teacher." *W.L. Gore & Assocs., Inc. v. Garlock, Inc.*, 721 F.2d 1540,1553, 220 USPQ 303, 312-313 (Fed. Cir. 1983).

Obviousness can not be established by hindsight reconstruction (here involving the arbitrary discarding of anaerobic sealant taught by Brede to be critical, and replacement of such sealant with another sealant not in an way contemplated by such reference or otherwise by those of skill in the art) to produce the claimed invention. *In re Gorman*, F.2d 982, 986, 18 USPQ 2d 1885, 1888 (Fed. Cir. 1991).

Further, the Examiner's suggested elimination from Brede of the anaerobic sealant taught to be essential by such reference, and substitution therefor of a light-curing sealant, would render the sealing operation more complex and problematic than using the sealant expressly taught by Brede. To utilize light-curing compositions, premature curing must be prevented.

Therefore, the composition may of necessity be provided in multiple parts (mixed at the time of use), or alternatively, provided in packaging must be non-transmissive of light, to prevent premature gelation of the composition before it is applied to the joint of the projectile and casing. By contrast, the anaerobic sealant approach expressly taught by Brede avoids such difficulties. Why, then, would one of ordinary skill in the art arbitrarily ignore the teachings of Brede, which are simple, direct and taught to be highly advantageous, and substitute an approach that is more complex and potentially problematic? The answer, of course, is that there is no logical reason for one of skill in the art, based on Brede, to make such a modification.

For all of the foregoing reasons, the process claimed by applicant for manufacturing an ammunition article, including application to the projectile/casing joint of a light-curable sealant composition and exposing the applied composition to curingly effective light, is not obvious or in any way derivable from Brede, as considered in the context of applicable skill and knowledge of the art.

For the foregoing reasons, claims 1, 2, 4-15 and 24 are fully patentably distinguishable over the art and in form and condition for allowance.

Similar distinguishing remarks pertain to newly added claims 32-34, which require, *inter alia*, non-capillary active sealant.

Concerning dependent claims under claim 1, the Examiner has stated that claim 2, reciting the light-curable composition as being devoid of anaerobic sealing component(s), would be obvious "on the basis

of its suitability for the intended use as a matter of obvious design choice." Such contention, however, based on Brede as the cited reference, requires wholesale destruction of the explicit teachings of Brede, removing the anaerobic sealant specifically taught to be essential by such reference.

Concerning claims 4-6, such claims are dependent under claim 1, and correspondingly patentable over Brede. The Examiner has attributed to Brede inherent teachings of relative movement, which are in fact nowhere found in such reference. In fact, by applying a capillary active anaerobic sealant as taught by Brede, the capillary or wicking action at the joint obviates the need for any movement between the applicator and the ammunition article.

The same remarks are also apposite to claims 7-9 which relate to specific applicator devices. The Examiner has based the rejection on Brede, which contains no teaching or suggestion of any specific type of applicator device. The Examiner has premised his rejections on the position that "it was known in the applicator art to use these devices," but as pointed out above, the specific teaching of Brede to use a capillary active anaerobic composition does not in any extrapolative manner lead to, imply or suggest usage of applicator devices of the type recited by applicant in claims 7-9. Additionally, claims 7-9 are of dependent form under claim 1, and patentable on such basis alone.

Concerning claims 10 and 11, which recite specific types of curingly effective light, the Examiner in citing Brede has stated that the subject matter of applicant's claims 10 and 11 is obvious "since it was known in the light-curing art that polymerization can occur under these types of radiation." This rejection ignores the fact that Brede teaches away from use of light-curing sealants by specific direction to use anaerobic sealants. Thus, the mere existence of knowledge relating to light-induced polymerization has no relevance to the rejection based on Brede, since Brede teaches away from such usage.

Similar remarks pertain to claim 12, which recites UV having a wavelength from about 220 to about 375 nanometers. The mere existence of UV light of such wavelength does not in any way discount the simple relevant fact that Brede teaches away from light-curing sealants.

Similar remarks pertain to the rejection of claims 13 and 14, each of which is of dependent form under claim 1, and which are directed to specific light sources for the curingly effective light. The Examiner has contended that the use of any such light-producing component for the purpose of producing ultraviolet radiation in Brede would be inherent. This again ignores the fact that Brede teaches away

from the use of UV radiation for curing of the sealant, by explicit teachings to utilize anaerobic sealants as the only sealant medium.

Claim 15 has been rejected on the basis of Brede. Claim 15 is of dependent form under claim 1 and recites that the sealant composition after exposure to the curingly effective light does not fluoresce. The Examiner has maintained that this is a "norm within the prior art." In response, it is pointed out that claim 15 is of dependent form under claim 1 and thereby is patentable for the same reasons advanced above in support of the patentability of claim 1. Further, Brede teaches use of fluorescent indicators, which are absent in the process specified in claim 15.

Concerning claim 24, directed to the light-curable sealant composition comprising a dye, claim 24 is of dependent form under claim 1 and is patentable on the same basis.

Concerning claim 30, the Examiner has stated that "Brede discloses the claimed invention" (page 7, line 1 of the June 7, 2004 Office Action). Claim 30, however, recites that "the light-cured sealant coating is formed by curing a photocurable resin with ultraviolet light curingly effective therefor." It has already been established above that Brede does not disclose use of light-curing sealants, and in fact teaches away from the use of any such sealants. Claim 30 therefore is patentably differentiated over Brede and in form and condition for allowance.

In the Office Action, claim 3 was rejected on § 103 grounds as unpatentable over Brede in view of De La Mare. In his statement of rejection, the Examiner has conceded that Brede does not disclose light-curable sealant being light-cured by exposure to curingly effective light for an exposure time in a range of from about 0.01 to 0.5 second, but contends that it would be obvious to modify Brede to include the exposure time taught by De La Mare in order to cure UV curable sealant compositions.

De La Mare teaches curable epoxy-vinyl ester compositions that are cured by dual cure modalities, viz, by exposure to UV radiation to effect a partial cure, i.e, a so-called "B-stage" (column 2, lines 7-8 of DeLa Mare), so that the B-staged composition then can "be subsequently heated to effect the desired cure to produce coatings exhibiting excellent physical and chemical properties" (column 2, lines 2-11, De La Mare).

The Examiner's rejection based on Brede in view of De La Mare therefore requires (1) arbitrarily discarding the anaerobic cure sealant taught to be essential by Brede, and (2) without any logical basis in

Brede or De La Mare, importing the epoxy-vinyl ester composition of De La Mare in Brede, so that UV partial cure in a time-frame taught by De La Mare (about 0.001 seconds to about 2.5 seconds – column 8, lines 60-61 of De LA Mare) can be used.

It is pointed out that by implementing such modification, however, the sealant would only be partially cured, and then would require elevated temperature, which in application to a cartridge including a projectile disposed in a casing containing gun powder or other propellant, would leads to dangerous and potentially catastrophic results if the heat necessitated for full cure of the De La Mare resin were to ignite the gun powder or other heat-sensitive propellant in the casing.

Even apart from such necessary temperature exposure, “to finish” the applied epoxy-vinyl ester sealant of De La Mare, the simple fact remains that there is no logical basis for combining the references in the manner proposed by the Examiner. This is apparent from the fact that the anaerobic sealant taught by Brede cures on application by virtue of its wicking action into the joint, as a capillary active sealant which then is exposed to anaerobic conditions in the joint. Despite this direct and simple methodology for sealing the projectile and casing assembly, the Examiner has proposed to discard the resin taught to be essential by Brede and in place thereof introduce a resin that requires UV curing, with the accompanying ostensible disadvantages of light-sensitive sealant materials, as well as the fact that De La Mare’s composition necessarily requires heat exposure, and this further provision of ovens, heat lamps, or other equipment, to effectuate the heat curing necessary to finish the sealant (to a final state of cure). This logically makes no sense, and in fact has no nexus in the teachings of either Brede or De La Mare. This absence of any derivative basis in the reference teachings themselves underscores the fact that there is no motivation or suggestion in the cited references that would lead the skilled person in the direction of applicant’s invention. Claim 3 therefore is patentable over Brede and De La Mare.

Claims, 16-23, 25-28 and 30 were rejected in the June 7, 2004 Office Action under § 103 as unpatentable over Brede in view of Leppard.

Leppard has been cited as teaching photocurable resins and mixtures of such resins with photoinitiators, the Examiner contending that it would have been obvious to modify Brede to include the light-curable sealant composition comprising the photocurable resins and photoinitiators of Leppard “in order to make a photoinitiator and photoinitiator mixtures capable of curing photopolymerizable compositions efficiently.” Such statement of rejection ignores the primary fact that the teachings of Brede are limited exclusively to the use of anaerobic sealant, an approach that is disclosed by Brede as highly efficient.

Brede specifically discloses that sealants used in accordance with his approach enter the gap of the projectile/casing joint by capillary action and "harden very quickly" so that "an immediate further working is possible" and "production times are drastically reduced, with the result that the method in accordance with the invention is excellently suited for use in various automatic loading and assembly machines" (column 2, lines 1-8 of Brede). Given such superiority and such excellent results, why would one logically discard the approach exclusively taught by Brede and vary the resin composition to one not in any way contemplated by Brede? The answer is that one reading Brede would not in any way be motivated to attempt modification with the consequent possibility of losing the superior results and excellent suitability of Brede's disclosed methodology.

Accordingly, the fact that Leppard teaches curable film-forming compositions does not in any way motivate the wholesale reconstruction of Brede's teachings. The proposed combination of reference teaching therefore fails of its essential purpose as a tenable basis for rejection of applicant's claims 16-23, 25-28 and 30. Such claims correspondingly are patentable over the art and in form and condition for allowance. The fact that Leppard teaches the use of monomeric diluents, neat formulations, and specific resin and photoinitiator species and concentrations, does not alter the complete absence of any tenable basis for the Examiner's proposed hypothetical modification of Brede.

Brede can only be regarded as teaching the use of anaerobic sealants, and the disclosure in Brede of the superiority and excellence of his results rebuts any suggestion by the Office that the essence of such reference – the use of anaerobic sealant – should be ignored. There is simply no basis for reconstructing the applicant's invention from Brede and references that disclose non-anaerobic sealants, since to do so does fundamental damage to the clear and unambiguous instruction of Brede's disclosure.

Concerning claims 27 and 28, which recite tensile force relationships between projectile/casing separation force, in the presence and absence of the light-curable sealant composition, it is pointed out that the approach of Brede, involving capillary penetration of sealant into the joint between the projectile and the casing, would be productive of tensile force for projectile/casing separation being significantly greater than 10%. See also in this respect the disclosure of the instant application at page 11, lines 1-2:

"It will be recognized that the sealant in accordance with the present invention is a moisture-resistant barrier, and not a bondant or structural adhesive" (page 11, lines 1-2, instant application)

Even apart from the foregoing it is pointed out that claims 27 and 28 each depend from claim 1 and are correspondingly patentable for the same reasons as advanced above in support of patentability of claim 1.

Claim 26 was rejected in the June 7, 2004 Office Action under § 103 as unpatentable over Brede in view of Tamura. Claim 26 is of dependent form under claim 1 and therefore is correspondingly patentable for the same reasons advanced above in support of patentability of the claim 1 process.

Tamura discloses a photocurable resin composition useful for vacuum-casting molding of shaped objects. Again, the citation of a secondary reference directed to photocurable resin compositions provides no logical basis for modifying the specific and unambiguous teaching of Brede to utilize an anaerobic sealant. Therefore, the Examiner's commentary and support of the hypothetical combination of references, relating to adjusting the photocurable resin to its application or mode of use and discovery of optimum or workable ranges of viscosity do not obscure the plain and simple fact that there is no basis for discarding the anaerobic sealant teachings that are essential in Brede, and clearly disclosed in such reference to be productive of superior and excellent results.

For such reasons, claim 26, depending from claim 1, is fully patentable over the cited art.

Fee Payable for Addition of New Claims 32-34

New Claims 32-34 have been added herein, increasing the total number of claims by three and the number of independent claims by 1, necessitating an added claims fee payment of \$70.00 under the fee schedule of 37 CFR § 1.16 (b) and (c).

A Credit Card Authorization Form authorizing charging in the amount of \$70.00 is enclosed in payment of such added claims fee. Authorization is hereby given to charge any additional fee or amount that may be properly payable in connection with the filing of this response to the June 7, 2004 Office Action, to deposit account number 08-3284 of Intellectual Property/Technology Law.

Submission of Affidavit of Milton S. Meshirer, under 37 C.F.R. § 1.132

As additional secondary evidence of the patentability of the invention claimed in the present application, enclosed and submitted herewith is an Affidavit of Milton S. Meshirer, which is submitted under the provisions of 37 C.F.R. § 1.132.

The Meshirer Affidavit identifies Mr. Meshirer as the applicant of the present application and attests that he has read and is knowledgeable of the June 7, 2004 Office Action, and the citation of Brede et al. U.S. Patent 6,367,386 disclosing the use of anaerobically hardening sealant for sealing of a cartridge including a case and a projectile.

The Affidavit attests to the inventor's demonstration of the claimed invention to ATK, Inc., a major United States munitions manufacturer, subsequent to ATK's evaluation of anaerobic sealants for ammunition projectile/casing sealing and ATK's determination that such anaerobic sealants approach was unsatisfactory for ammunition manufacturing applications.

Appended to the inventor's Affidavit in corroboration of the facts stated in the preceding paragraph is a letter obtained by the inventor from ATK documenting that company's prior experience with anaerobic sealants and its response to the demonstration by Mr. Meshirer of the invention.

As stated in paragraph 6 of the Affidavit, ATK began looking at approaches and technology for sealing cartridges at the projectile/casing interface, as result of moisture penetration problems adversely affecting small caliber munitions, and ATK investigated anaerobic sealants for projectile/casing sealing and observed same to be unsatisfactory. As a result, ATK contacted the inventor to investigate alternative approaches. The inventor demonstrated the claimed invention to ATK in 2003 and resolved performance issues that had plagued anaerobic sealant testing, providing proof of principle evidencing the superiority and benefits of light-cured sealants in such projectile/casing sealing application.

The Examiner therefore is requested to take cognizance of the § 1.132 Affidavit, as providing additional evidence of the patentability of the instant claimed invention.

CONCLUSION

For all the foregoing reasons, claims 1-34 as now pending in the application are patentably demarcated over the cited references, and in form and condition for allowance. The Examiner is therefore requested to reconsider the claims in light of the foregoing, and to responsively issue a Notice of Allowance for the application.

If any remaining issues exist, the Examiner is requested to contact the undersigned attorney at (919) 419-9350.

Respectfully submitted,



Steven J. Holtquist
Reg. No. 28,021
Attorney for Applicant

**INTELLECTUAL PROPERTY/
TECHNOLOGY LAW**
Telephone: (919) 419-9350
Fax: (919) 419-9354
Attorney Ref: 4224-101

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re United States Patent Application of:

Applicant: MESHIRER, Milton S.

Application No.: 10/662,193

Date Filed: September 11, 2003

Title: AMMUNITION ARTICLES
COMPRISING LIGHT-
CURABLE MOISTURE-
PREVENTATIVE SEALANT
AND METHOD OF
MANUFACTURING SAME

Docket No.: 4224-101

Examiner: Bret C. HAYES

Art Unit: 3644

Conf. No.: 9370

23448

FACSIMILE TRANSMISSION CERTIFICATE

Fax No.: (703) 872-9306

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1450, on July 27, 2004, to United States Patent and Trademark
Office facsimile transmission number: (703) 872-9306


Candace White

August 13, 2004

Date

AFFIDAVIT OF MILTON S. MESHIRER, RELATING TO INVENTION CLAIMED IN U.S.
PATENT APPLICATION NO. 10/662,193

Commissioner for Patents
PO Box 1450
Alexandria, VA 22313-1450

MILTON S. MESHIRER, duly being sworn, deposes and says:

1. THAT he is the applicant of United States Patent Application No. 10/662,193 filed September 11, 2003 for "AMMUNITION ARTICLES COMPRISING LIGHT-CURABLE MOISTURE-
PREVENTATIVE SEALANT AND METHOD OF MANUFACTURING SAME."

2. THAT he has read and is knowledgeable of the substance of the June 7, 2004 Office Action issued by
United States Patent and Trademark Office in such application, including, *inter alia*, rejection of claims

based on Brede et al. U.S. Patent No. 6,367,386 which discloses the use of anaerobically hardening sealant for sealing of a cartridge including a case and a projectile.

3. THAT the present application discloses and claims a process for manufacturing an ammunition article, comprising (a) providing a cartridge including a projectile disposed in the casing and presenting a joint between the projectile and the casing, (b) applying to the joint a sealingly effective amount of light-curable sealant composition, and (c) exposing the applied sealant composition to curingly effective light ("the Invention").

4. THAT he demonstrated the Invention to ATK, Inc. ("ATK") a major United States munitions manufacturer, subsequent to ATK's evaluation of anaerobic sealants for ammunition projectile/casing sealing and ATK's determination that such anaerobic sealants approach was unsatisfactory for ammunition manufacturing applications.

5. THAT in documentation of the events stated in paragraph 4 above, he has obtained from ATK a letter documenting such company's prior experience with anaerobic sealants and its response to the demonstration by affiant of the Invention, and that a true and exact copy of such letter from ATK, by its I R&D Engineer Randall Busky, is attached in Appendix A hereof.

6. That such letter obtained by him from Mr. Busky documents the fact in the mid-1990's, ATK began looking at approaches and technology for sealing cartridges at the projectile/casing interface, as a result of moisture penetration problems adversely affecting small caliber munitions, and that ATK investigated anaerobic sealants for projectile/casing sealing applications and observed same to be unsatisfactory, as a result of which ATK contacted affiant in an effort to investigate alternative approaches, that the Invention was demonstrated to ATK in 2003 and resolved performance issues that had plagued anaerobic sealant testing, providing successful proof of principle evidencing the superiority and benefits of light-curing sealants in such projectile/casing sealing application.

7. THAT the letter from ATK as attached hereto in Appendix A accurately documents the results of his demonstration of the Invention to ATK.

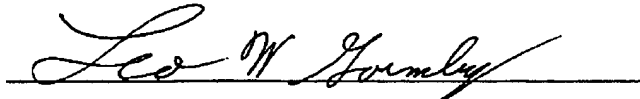
Further, affiant saith not.


Milton S. Meshirer

Date: 8/12, 2004

STATE OF NEW YORK)
)SS.:
COUNTY OF WESTCHESTER)

Before me on 8/12, 2004 came MILTON S. MESHIRER, the person named in the foregoing document and identified as such to me, who in my presence executed the foregoing document and attested same as his free act and deed.


Notary Public

My commission expires: 5/19/07

(SEAL)

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Date: Thu, 12 Aug 2004 12:02:20 EDT

Subject: Busky Letter

To: suesimmonds125@yahoo.com

August 11, 2004

Randall Busky

Chemical Engineer

IR&D Engineering

Alliant Lake City Small Caliber Ammunition Company, LLC

Lake City Army Ammunition Plant

P.O. Box 1000

Independence, MO 64051-1000

Mickey Meshirer

Beacon Adhesive, Co.

125 MacQuesten Parkway South

Mount Vernon, NY 10550

Subject: State of the Art - Small Caliber Cartridge Waterproofing

Dear Mr. Meshirer

On behalf of the Army Research and Development Engineering Command (ARDEC) and ATK Lake City; I would like to thank you for your participation in the market survey and experimentation in the 9 months from Oct 2003 to June 2004.

Since you have participated in many previous surveys and demonstration, you understand ARDEC periodically attempts to update its manufacturing technology. Since 1977, several attempts have been made at updating cartridge waterproofing. A short Chronology follows:

February 1977 Gigliotti and Taylor, ARDEC, Frankford Arsenal

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In-joint application of anaerobic Methyl methacrylates (MA) are approved and placed in Technical Data Package

March 1989, Martinelli and Bonk, ARDEC, Picatinny Arsenal
Confirmation of MA as best material, if application method found

June 1992, Finn, Olin Corporation on behalf of ARDEC, Picatinny Arsenal
First attempt at application methods with MA, unacceptable results concerning mass control

April 1994, Parker, Olin Corporation on behalf of ARDEC, Picatinny Arsenal
Second attempt at application methods with MA, unacceptable results concerning mass control

September 1994, Parker, Olin Corporation on behalf of ARDEC and Strategic Environmental Research and Development Programs (SERDP)
Water-based emulsions developed as alternatives

December 1996, Parker, Olin Corporation on behalf of ARDEC and SERDP
Application methods for water-based emulsions developed

January 1997, Martinelli and Rorabaugh, ARDEC, Picatinny Arsenal and SERDP
Physical boundary conditions of high rate application of water-based emulsions are noted; slow application speeds with long drying time

June 2004, Bubniak and Busky, ATK Lake City on behalf of ARDEC, Picatinny Arsenal
Application methods and alternative configurations for MA and UV activated acrylics are demonstrated

World Wide Survey

In preparation for the 2002 - 2004 work, a worldwide survey was conducted by ATK Lake City on behalf of ARDEC. The following is a benchmark survey of cartridge waterproofing:

North America -

Solvent Based Asphalt
Water Based Asphalt Emulsions
In-joint post assembly application of MA

South America -

In-joint post assembly application of MA
Lap joint - nitrocellulose

Europe -

In-joint post assembly application of MA
Lap joint - nitrocellulose

Asia -

Solvent Based Asphalt
Lap joint - nitrocellulose

Beacon Adhesive Application Demonstration

The Beacon Adhesive demonstration of a UV activated acrylic-based lap joint application is, to the best of my knowledge, a unique manner of waterproofing cartridges.

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Yahoo! Mail - suesimmonds125@yahoo.com

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Once again;
Thank you for your participation

//signed//
Randall Busky

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